AUSTRALASIA AND OCEANIA

By Flood and Field. Adventures Ashore and Afloat in North Australia. By Alfred Searcy. 327 pp. Map, ills. G. Bell & Sons, Ltd., London, 1912. 6s. 8½ x 5½.

This is a story of adventure on the northern shores of Australia a number of years ago. The book contains an attractive element in the tales of many narrow escapes and the adventures with animals and natives, but as it appears to have been written as a reminiscence, there is the chance that many of the details may have taken on unnatural values. Without doubt an accurate idea of the difficulties of the early traders on these shores may be obtained from the narrative; and the life of the natives, the condition of the country and the labor of the first settlers are vividly pictured. R. M. BROWN.

An Introduction to the Geology of New South Wales. By C. A. Süssmilch. xii and 177 pp. Maps, ills., index. Dept. of Public Instruction, Technical Education Branch, Sydney, New South Wales, 1911. 5s. 8½ x 5½.

A little book giving in compact form, primarily for students, an account of the physiography, general geology, and economic geology of New South Wales. Incompleteness of knowledge of the geology of the state makes necessary many gaps in the treatment of the subject. The author adopts the classification of formations used in Europe and North America, but does not believe that formations bearing like names in Europe and Australia were of contemporary origin. In general, the succession of animals and plants in Australia is similar to that in other parts of the world, but with at least two marked differences: (1) the hideous saurians which dominated the land life of the Mesozoic elsewhere are wholly absent from Australia; (2) placental mammals, either as fossils or as living indigenous animals, are also absent, but monotremes and marsupials, both Tertiary and present, are represented on a scale wholly unknown elsewhere. The author considers that there is satisfactory evidence of two glacial epochs in the Pleistocene period, but that the glaciers were of very limited size. There are several colored maps and a large number of excellent illustrations.

R. H. WHITBECK.

Meine Reise nach den Strafkolonien. Von Dr. Robert Heindl. 470 pp. Ills. Ullstein & Co., Berlin-Wien, 1913. 9½ x 7.

More than half the volume is devoted to a record of the impressions which the author received in the French deportation colony of New Caledonia. He is by no means unmindful of statistics and the machinery of the regulation of prisoners, but the best feature of his study is that he takes a keen interest in the welfare of the criminals, the opportunity which is given them to reform and the attitude of the administration. His narrative abounds in vivacious description of scenes which will do far more than any earlier work upon New Caledonia to present a faithful spectacle of the life of that crime-stained pool of the dregs of French life. Another large section of the volume is given up to an equally interesting account of the Andamans and the British treatment of Indian criminals. The volume will prove quite as attractive to students of geographical literature as it will to penologists. Between these more important chapters is inserted a review of modern prisons in Australia with reminiscences of the former transportation system, a summary sketch of Chinese penal methods and the prison establishment at Ceuta. Jail is surely an odd goal of journeying (he makes a jest upon this theme through failure to recognize the English spelling of jail as gaol); but, no matter what the end, he has succeeded in making a valuable contribution to the knowledge of Nouméa and Port Blair.

WILLIAM CHURCHILL.

EUROPE

The Building of the Alps. By T. G. Bonney. 384 pp. Ills. T. Fisher Unwin, London, 1912.

Like all the books by Canon Bonney, this beautifully printed volume is written in a pleasing style, and by reason of the author's long and intimate

familiarity with the Alps as a place of recreation, it will make a strong appeal to the traveler with a taste for scientific reading. It is likely to recommend itself particularly to the climbing fraternity because of the author's prominence in the Alpine Club recognized in his election to the presidency.

Both in its title and in its preface the book lays claim, however, to be something more than a pleasant discursive series of readings, and it is here that it is open to serious criticism. Particularly during the last fifteen years, views held concerning the structure of the Alps have passed through a revolution remarkable enough to punctuate sharply the history of modern geology. When Dr. Bonney began his Alpine studies Escher's conception of the double fold, later elaborated and extended to new districts by Heim, his pupil and successor, represented the accepted view of Alpine structure, and it continued to be standard doctrine until within the last fifteen years.

When, however, Bertrand's keen suggestion of successive vast overthrusts had been successfully applied to the central Alps by Schardt and later in more detail by Lugeon, it began to be seen that the older conception was untenable; and with the acceptance of the new view by Heim himself in 1898, in Switzerland, at least, the older hypothesis was to a large extent abandoned. Since the history of science supplies few parallels to this complete reversal of view by a savant of the first rank whose whole lifework had become identified with an older conception, it must indicate both the cogency of the arguments and the unusual breadth of mind of the man. Strangely enough it does not stand alone in this remarkable revolution in the history of Alpine geology, for the late Professor Uhlig, long identified with Alpine tectonic studies, at first attacked the new conception only to become later its warm advocate.

To-day throughout Switzerland the necessity for assuming in the Alps a succession of vast blanket-like layers (*Decken*) separated by surfaces of disjunction (overthrusts) is recognized by all, and the supporters of this view in other Alpine countries are becoming augmented steadily in numbers. Many geologists, and among them the reviewer, believe, however, that the *explanation* of the structure is inadequate and mechanically unsound. Because of the new light thrown upon the subject of Alpine structure by the new conception, the efficient Swiss Geological Commission under Heim's direction is now remapping geologically the entire national domain.

This important subject is treated by Professor Bonney without mention either of M. Bertrand or of Professor Schardt, the real founder of the new school; and the work of Lugeon is passed over with the statement, "I have also maintained that some of the sections which the latter cites as favorable to his hypothesis, are either improbable in themselves or involve mistakes in the identification of rocks, and that such transference across the axis of the Alps would be under the conditions then existing, mechanical impossibilities—impossibilities which do not even require discussion." This does not produce a favorable impression upon the well-informed reader, the more so since Professor Bonney's list of excursions into the Alps does not indicate that he has entered the crucial districts since the new ideas were promulgated.

The glaciers of the Alps are discussed at considerable length along the line of the author's earlier publications. After reiterating his view that glacial cirques are due to erosion by water as originally outlined in his initial paper upon the Alps (1871), Professor Bonney says: "Certain geologists in America and in Germany have attributed to the action of snow and glaciers the following features—corries and cirques, the formation of many valleys, the deepening and enlarging of others," leaving it to be inferred that an undivided British school accepts his own view—an assumption which has already called forth a sharp protest. After somewhat fully quoting the accurate observations made within a bergschrund by W. D. Johnson, the author says: "I believe these processes to be largely imaginary. The temperature in the lower part of the bergschrund would be comparatively uniform." Almost at the time these words were written a countryman of the author was descending into bergschrunds upon the Blümlisalpstock with results since published which confirm in every particular the observations of Johnson and in addition supply a measured day temperature at the bottom which was several degrees above zero.

Dr. Bonney devotes considerable space in attempting to show that Alpine

valleys are not markedly U-shaped in cross section, and that they have been shaped almost exclusively by water. To quote him: "Thus valley after valley in the Alps seems to leave no escape from the following dilemma: either a valley cut by a glacier does not differ in form from one made by running water, or one which has been excavated by the latter, if subsequently occupied, is but superficially modified by ice."

In the section on Alpine Meteorology we find the statement, "The Föhn is a wind from the south, hot, stifling, and dry, supposed to come from the deserts of North Africa," a view long since discarded. One lays down the book with the conviction that science has moved forward since the genial and lovable author began his Alpine studies, but that he is scarce conscious of the fact. The material changes which time has wrought in opening up the Alpine Highland during this period are delightfully told in the closing chapter, entitled: "Fifty Years of Change." In this direction chiefly and in its touches of local color the book must make its appeal to all who know and love the Alps. It is, moreover, beautifully printed and illustrated by excellent photographs from many sources.

WM. HERBERT HOBBS.

POLAR

The South Pole: An Account of the Norwegian Antarctic Expedition in the "Fram," 1910–12. By Roald Amundsen. Translated from the Norwegian by A. G. Chater. Vol. 1, xxxv and 392 pp. Vol. 2, x and 449 pp. Maps, ills., index. John Murray, London. Lee Keedick, 140 Nassau St., New York. 1913. $10. Postage extra. 9½ x 6½ each.

The English edition of this work is superbly produced. None of the geographical flavor has been sacrificed in the translation from the Norwegian by Mr. Chater. Amundsen's plans for equipment, his sledging methods, hygienic régime and all other phases of his work were so richly the result of his own experience and that of others and of the devices he originated for meeting the special problems before him that the detailed account of them in these volumes adds much to the value of his narrative. Meteorology, the complete meteorological record from Framheim, the astronomical observations at the Pole and oceanography have adequate treatment in the appendices. The chapter on oceanography was written by Professor Björn Helland-Hansen and Dr. Fridtjof Nansen. Amundsen's book in the German edition was so adequately reviewed in the *Bulletin* (Vol. 44, 1912, pp. 903–908) by Professor W. H. Hobbs that no extended further notice of it is here required.

GEOMORPHOLOGY

The Making of the Earth. By J. W. Gregory. Home Univ. Library. 256 pp. Index. Henry Holt & Co., New York, 1912. 50 cents. 7 x 4½.

The author is Professor of Geology in the University of Glasgow. He does not indicate whether he designs the book for general readers or for geologists and geographers. For the best profit in reading the work the former class would need some preliminary knowledge. The professional student will find a compact and useful summary of present views on some of the deeper problems of the origin and history of the earth.

One of the principal chapters deals with the nebular origin. The author appears to be in accord with the planetesimal theory as expounded by Professor Chamberlin, holding that the evidence as it stands is consistent with the hypothesis of a nebula consisting of a swarm of meteorites, ascribing the gaseous conditions postulated by Laplace to the more primitive stage of the nebula.

For the geographer the most suggestive chapter is, perhaps, that on the "Beneficent Influence of Segregation." By various processes of rock making and rock change the materials of the constituent meteorites were separated and brought together, like to like, forming the different kinds of common rocks and the great variety of useful materials produced in these rocks by secondary changes.

The volume is divided into four parts, each with a series of short chapters.